

REMARKS

Claims 7-19 are pending in the above identified application. The Examiner has rejected claims 7-19. Applicants have amended claims 7, 11, and 16 and canceled claim 15. Applicants herein traverse these rejections.

Telephonic Interview

Applicants thank the Examiner for attending the telephonic conference on November 29, 2005. The Examiner sent an Interview Summary on December 5, 2005, which Applicants acknowledge.

Claim Rejections under 35 U.S.C. § 112

The Examiner has rejected claims 7-19 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. In particular, the Examiner points out that “[c]laims 7, 11 and 16 all contain the limitation of the second passivation layer suppressing lateral leakage current between collection electrodes.” The Examiner indicates that this language is indefinite because “the claims do not define what level of current the lateral leakage is being reduced from or what level of current occurs after the lateral leakage has been reduced.” Without agreeing with or acquiescing in the Examiners characterizations, in the interests of furthering prosecution of this application, each of claims 7, 11, and 16 has been modified to remove this language.

Therefore, Applicants respectfully request that the Examiner remove the rejection of claims 7, 11, and 16 based on 35 U.S.C. § 112, paragraph 2. Additionally, claims 8-10, 12-14, and 17-19 were also rejected because of their dependencies on claims 7, 11, and 16. Therefore, Applicants respectfully request that the Examiner remove the rejection of claims 8-10, 12-14, and 17-19 as well.

Claim Rejections under 35 U.S.C. § 103

The Examiner has rejected claims 7-19 under 35 U.S.C. § 103 in light of Applicants prior art in view of Ishaque (U.S. Pat. No. 5,288,989) and further in view of Possin (U.S. Pat. No. 5,777,355).

The cited prior art does not teach all of the elements of the claims

Although Applicants neither agree or acquiesce in the Examiner's characterization of the claims and the prior art, in the interest of furthering prosecution on this application Applicants have amended the claims as discussed during the previously described telephonic conference. In particular, claims 7, 11, and 16 have each been amended to recite "the second passivation layer being thinner than the first passivation layer." None of the references teach this feature.

The second passivation layer as recited in claims 7, 11, and 16 is the passivation layer that is close to the detector silicon: Claim 7 recites "depositing sensor material comprising a continuous layer of i a-Si over the collection electrode and at least a portion of the second passivation layer," claim 11 recites "depositing a continuous layer of i a-Si disposed on the second passivation layer and over the first doped a-Si layer," and claim 16 recites "depositing sensor material comprising a continuous layer of i a-Si over the collection electrode and at least a portion of the second passivation layer." The admitted prior art does not include a second passivation layer at all. In Ishaque, the thicker first passivation layer is deposited on the silicon (see, e.g., the Figure and col. 4, lines 32-42, where element 120 represents the APD body). Possin does not cure the defects in the teachings of Ishaque.

Therefore, claims 7, 11, and 16, as amended, are allowable over Applicants' prior art, Ishaque, and Possin. Claims 8-10, 12-14, and 17-19, which depend from claims 7, 11, and 16, respectively, are then also allowable over the cited prior art. Claim 15 has been canceled.

There is no motivation to combine the teachings of Ishaque, Possin, and Applicants' prior art

Ishaque teaches application of a moisture barrier layer. There is no motivation for one of ordinary skill in the art to add a moisture barrier layer to the barrier layer taught in Applicants' prior art. Applicants do not agree or acquiesce in the Examiner's analysis of this issue.

In the office action, on page 10, the Examiner lists five motivations that the two-tier passivation layer of Ishaque provides:

1) an electrically insulating barrier, 2) the ability to cover the underlying structure without cracking or inducing stresses that adversely effect the dielectric integrity of the passivating layer, 3) an interface with the passivating layer that has minimal conductivity so that leakage in reverse bias is not degraded, 4) a layer thick enough so that the electric field inside the dielectric layer does not become very large, and 5) protection from degradation due to humidity, moisture, or chemical attack from materials in the environment or present on the wafer during fabrication and over time as the device is exposed to a variety of environments. See Ishaque et al. column 2 lines 3-31.

However, Ishaque further teaches that single passivation layers "have been found to provide a satisfactory passivating layer with regard to several of the desirable characteristics listed above."

(Ishaque, col. 2, lines 33-36). The only drawback listed is that "polyimide passivating layers include the poor moisture barrier provided by polyimides." (Ishaque, col. 2, lines 37-38).

Therefore, the only motivation of those listed by the Examiner that requires a second passivation layer is that of providing a moisture barrier. In Applicants' prior art, the barrier layer is fully embedded in the device and there is no need for a moisture barrier. In fact, one skilled in the art

would resist a good moisture barrier because of the desire not to trap moisture in the device. Therefore, one skilled in the art would not be motivated to combine the teachings of Ishaque with those of the prior art as suggested by the Examiner.

Therefore, claims 7-19 are allowable over the cited prior art because there is no motivation to combine Ishaque with the Applicants' teaching of the prior art.

Conclusion

In view of the foregoing amendments and remarks, Applicants respectfully request reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to Xerox Deposit Account 24-0037.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

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By: _____

Gary J. Edwards

Reg. No. 41,008

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